

WHAT IS CLAIMED IS:

1. A method for stopping operation of a hydrogen gas generating system which generates hydrogen gas by reforming a predetermined raw material, comprising:

purging a residual flammable material by supplying air into the hydrogen gas generating system when it is determined that an environment condition is such that there will be no effect on the hydrogen gas generating system from heat generated by a reaction between the residual flammable material within the hydrogen gas generating system and oxygen.

2. The method according to claim 1, wherein the purging is performed by the air when an internal temperature of the hydrogen gas generating system is equal to or less than a predetermined temperature.

3. The method according to claim 1, wherein the purging is performed by the air when an internal pressure of the hydrogen gas generating system is equal to or less than a predetermined pressure.

4. The method according to claim 1, wherein the purging is performed using air having a temperature which is less than an internal temperature of the hydrogen gas generating system and drops with the passage of time.

5. The method according to claim 1, wherein the hydrogen gas generating system further comprises a vaporizing portion which vaporizes the raw material, and wherein air heated to a temperature less than an internal temperature of the hydrogen gas generating system by the vaporizing portion is supplied in the air purging.

6. The method according to claim 1, wherein the hydrogen gas generating system further comprises a vaporizing portion which vaporizes the raw material, and wherein air heated to a temperature less than an internal temperature of the hydrogen gas generating system with residual heat from the vaporizing portion after operation of the vaporizing portion has stopped is supplied in the air purging.

7. The method according to claim 1, further comprising steam purging by supplying steam into the hydrogen gas generating system prior to supplying air, so as to discharge at least one component of the residual flammable material, regardless of whether the environment condition is not.

8. The method according to claim 7, wherein the steam is supplied at a pressure lower than a saturated vapor pressure.

9. The method according to claim 8, wherein the pressure of the steam is determined based on a temperature inside the hydrogen gas generating system.

10. The method according to claim 8, wherein the pressure of the steam is determined based on a pressure inside the hydrogen gas generating system.

11. The method according to claim 7, wherein switching from the steam purging to the air purging is performed based on a temperature inside the hydrogen gas generating system.

12. The method according to claim 7, wherein switching from the steam purging to the air purging is performed based on a pressure inside the hydrogen gas generating system.

13. The method according to claim 7, wherein switching from the steam purging to the air purging is performed based on a period of time for which the steam purging is performed.

14. The method according to claim 7, further comprising depressurizing inside of the hydrogen gas generating system after supplying the air.

15. The method according to claim 1, further comprising inert gas purging by supplying inert gas into the hydrogen gas generating system until it is determined that an environment condition is such that there will be no effect on the hydrogen gas generating system from heat generated by a reaction between the residual flammable material within the hydrogen gas generating system and oxygen so as to discharge the residual flammable material.

16. The method according to claim 1, wherein the predetermined fuel is a hydrocarbon compound.

17. A method for stopping operation of a fuel cell system comprising a hydrogen gas generating system which generates hydrogen gas by reforming a predetermined raw material and a fuel cell which generates electricity using the generated hydrogen, comprising:  
purging a residual flammable material by supplying air when it is determined that an environment condition is such that there will be no effect on the hydrogen gas generating system and the fuel cell from heat generated by a reaction between the residual flammable material within the hydrogen gas generating system and the fuel cell and oxygen.

18. The method according to claim 17, further comprising steam purging by supplying steam into the hydrogen gas generating system prior to supplying air so as to discharge at least one component of the residual flammable material, regardless of the environment condition.

19. A hydrogen gas generating system for generating hydrogen gas by reforming a predetermined raw material, comprising:

a reforming portion for reforming the raw material;  
an air supply portion for supplying air to the reforming portion; and  
a control portion for controlling the air supply portion during a stopping operation so as to supply air into the reforming portion when it is determined that an environment condition is such that there will be no effect on the hydrogen gas generating system from heat generated by a reaction between a residual flammable material within the reforming portion and oxygen.

20. The hydrogen gas generating system according to claim 19, wherein the air supply portion supplies the air when an internal temperature of the hydrogen gas generating system is equal to or less than a predetermined temperature.

21. The hydrogen gas generating system according to claim 19, wherein the air supply portion supplies the air when an internal pressure of the hydrogen gas generating system is equal to or less than a predetermined pressure.

22. The hydrogen gas generating system according to claim 19, wherein the air supply portion supplies the air having a temperature which is less than an internal temperature of the hydrogen gas generating system and drops with the passage of time.

23. The hydrogen gas generating system according to claim 19, further comprising a vaporizing portion which vaporizes the raw material, and wherein the air supply portion supplies air heated to a temperature less than an internal temperature of the hydrogen gas generating system by the vaporizing portion.

24. The hydrogen gas generating system according to claim 19, further comprising a vaporizing portion which vaporizes the raw material, and wherein the air supply portion supplies air heated to a temperature less than an internal temperature of the hydrogen gas generating system with residual heat from the vaporizing portion after operation of the vaporizing portion has stopped.

25. The hydrogen gas generating system according to claim 19, wherein the air supply portion supplies steam into the hydrogen gas generating system prior to supplying air, so as to discharge at least one component of the residual flammable material, regardless of whether the environment condition is not.

26. The hydrogen gas generating system according to claim 25, wherein the air supply portion supplies steam at a pressure lower than a saturated vapor pressure.

27. The hydrogen gas generating system according to claim 26, wherein the control portion determines the pressure of the steam based on a temperature inside the hydrogen gas generating system.

28. The hydrogen gas generating system according to claim 26, wherein the control portion determines the pressure of the steam based on a pressure inside the hydrogen gas generating system.

29. The hydrogen gas generating system according to claim 25, wherein the control portion switches from the steam purging to the air purging based on a temperature inside the hydrogen gas generating system.

30. The hydrogen gas generating system according to claim 25, wherein the control portion switches from the steam purging to the air purging based on a pressure inside the hydrogen gas generating system.

31. The hydrogen gas generating system according to claim 25, wherein the control portion switches from the steam purging to the air purging based on a period of time for which the steam purging step is performed.

32. The hydrogen gas generating system according to claim 25, wherein the air supply portion depressurizes inside of the hydrogen gas generating system after supplying the air.

33. The hydrogen gas generating system according to claim 19, further comprising an inert gas tank for storing inert gas, wherein the air supply portion supplies inert gas into the hydrogen gas generating system until it is determined that an environment condition is such that there will be no effect on the hydrogen gas generating system from heat generated by a reaction between the residual flammable material within the hydrogen gas generating system and oxygen so as to forcefully discharge the residual flammable material.

34. The hydrogen gas generating system according to claim 19, wherein the predetermined fuel is a hydrocarbon compound.

35. A fuel cell system comprising a hydrogen gas generating system which generates hydrogen gas by reforming a predetermined raw material and a fuel cell which generates electricity using the generated hydrogen, comprising:

a reforming portion for reforming the raw material;

an air supply portion for supplying air to the reforming portion; and

a control portion for controlling the air supply portion during a stopping operation so as to supply air into the reforming portion when it is determined that an environment condition is such that there will be no effect on the hydrogen gas generating

system from heat generated by a reaction between a residual flammable material within the reforming portion and oxygen.

36. The fuel cell system according to claim 35, wherein the air supply portion supplies steam into the hydrogen gas generating system prior to supplying air, so as to discharge at least one component of the residual flammable material, regardless of the environment condition.